CASE REPORT

Penile Tuberculosis Associated with Monoclonal Gammopathy of Undetermined Significance

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Mycobacterium tuberculosis (TB) infection of the penis is a rare but serious problem. We report a case of penile TB in a 75-year-old man who presented with fever and dyspnea. No active lung lesions except pleural and pericardial effusion were found on chest X-ray. Monoclonal gammopathy of undetermined significance was diagnosed after serum and urine electrophoresis studies, and repeated bone marrow studies. Genital examination showed diffuse papulonecrotic skin ulcers involving the whole penile shaft, extending ventrally to the median raphe of the scrotum. Pus smear showed positive acid-fast stain, and culture yielded *M. tuberculosis*. Culture of pleural and pericardial effusion was also positive for *M. tuberculosis.* Anti-TB treatment was given with isoniazid, ethambutol, rifampin and pyrazinamide, and the cutaneous lesion was noted to be healed at follow-up 6 months later. Although rare, the possibility of TB as a cause of genital ulcer should be kept in mind. [*J Formos Med Assoc* 2006;105(9):753–755]

Key Words: antibody, genitourinary, multiple myeloma, mycobacterium

Tuberculosis (TB) remains a serious public health issue. Penile TB is a rare condition,[1–3] which has not been reported in Taiwan. We report a case with penile TB to alert clinicians to this possible diagnosis. This case is unusual in that the ulcer involved the whole phallus but spared the glans. Review of the literature showed no previously reported case of penile TB associated with monoclonal gammopathy of undetermined significance (MGUS).

Case Report

This 75-year-old man had a past history of gout, hypersensitivity vasculitis secondary to allopurinol, and hypertension. He did not have diabetes mellitus or a history of immunodeficiency-related disease. He visited our hospital due to fever with progressive dyspnea for several days. Congestive heart failure was impressed and he was referred for urologic consultation due to penile and scrotal skin necrosis.

Genital examination showed diffuse papulonecrotic ulcers involving the whole penile shaft and the prepuce, extending to the median raphe of the scrotum, but the glans was spared. Ulcers were interposed with purulent yellow pus and dark-black gangrene (Figure A). Swab smear showed positive acid-fast stain, and culture yielded *Mycobacterium tuberculosis*. The strain was sensitive to all the first-line anti-TB chemotherapies. There was no inguinal lymphadenopathy. Culture of pleural and pericardial effusion was

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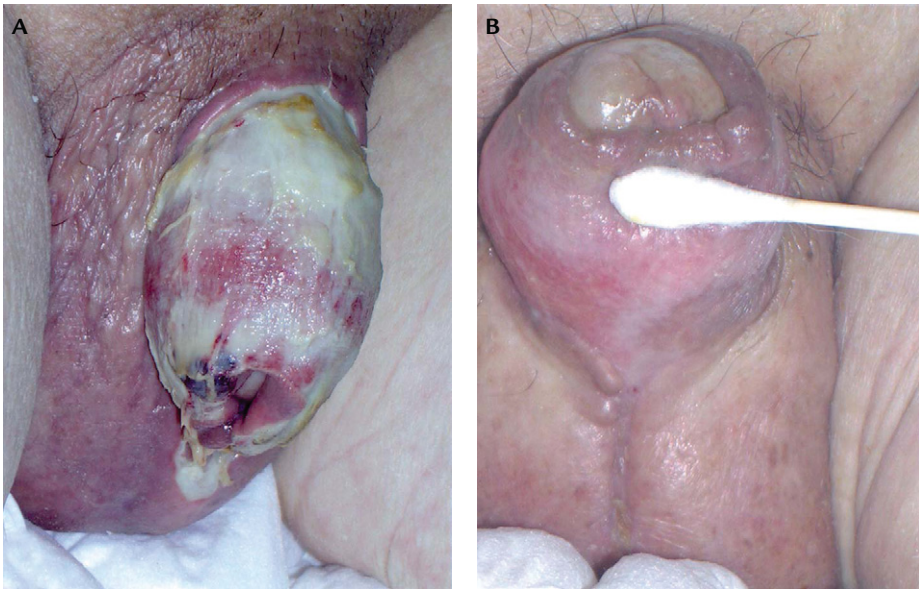

Figure. (A) Before treatment: ulcers were interposed with purulent yellow pus and dark-black gangrene involving the penile shaft and prepuce, but the glans was spared. (B) Three months after treatment: the wound was much cleaner, with granulation tissue replacing the ulcer.

also positive for *M. tuberculosis*, and staining of these specimens failed to show acid-fast bacilli. Chest X-ray and sputum showed no evidence of pulmonary TB. Urine culture also failed to show *Mycobacterium* species.

Test for human immunodeficiency virus antibody (anti-HIV) was negative. MGUS was diagnosed incidentally based on the results of serum and urine electrophoresis studies, and repeated bone marrow studies. Suprapubic cystostomy for urine diversion was performed. Anti-TB medications were started immediately after the smear showed a positive acid-fast stain. HERZ (isoniazid 300 mg qd, ethambutol 800 mg qd, rifampin 600 mg qd, pyrazinamide 1500 mg qd) was initiated. Hyperuricemia developed 1 month later, and pyrazinamide was therefore discontinued for 1 more month and then restarted at a low dose of 50 mg qd. The patient complained of visual disturbance 2 months after the first dose, so ethambutol was discontinued. The patient took isoniazid 300 mg qd, rifampin 600 mg qd and pyrazinamide 50 mg qd thereafter for an additional 6 months.

After treatment with anti-TB drugs for 2 months, repeat tests for acid-fast stain or TB culture were all negative. By the 3rd month of treatment, the wound had become cleaner with only a small amount of discharge on the edge, and the gangrenous tissue had disappeared (Figure B). By the 6th month of treatment, re-epithelialization was almost complete, with only a small area of granulation tissue left uncovered by the skin.

Discussion

Although TB is common, penile TB is extremely rare even in endemic areas.[1,2] In 1878, Fournier first described a case of primary penile TB.[4] By 1946, only 110 cases had been reported.[4] Even though anti-TB drugs have largely been successful, the resurgence of TB after the advent of acquired immunodeficiency syndrome (AIDS) may have resulted in the increase of cutaneous TB.[5]

TB of the penis may be of primary or secondary type. Primary infection may be acquired through sexual contact with an infected partner or contamination from infected clothing.[1] It has also been reported as a complication of ritual circumcision when performed by tuberculous rabbis.[4] The present case developed disseminated

TB infection involving the penile skin, pericardial and pleural effusion. No mycobacterium was found in the lungs or genital urinary tract. Thus, the lesion on the penis was considered to be a secondary type of disseminated TB.

The patient was suspected to have an immunocompromised status. Anti-HIV was negative. Multiple myeloma was suspected due to proteinuria, but findings on serum/urine electrophoresis and repeated bone marrow studies led to the diagnosis of MGUS instead. To the best of our knowledge, penile TB in association with MGUS has not been previously reported. It has been hypothesized that MGUS is associated with chronic inflammation processes including TB.[6] It has also been reported that patients with antigenic stimulation, such as TB, have a higher risk of developing multiple myeloma.[7,8] Our report is another example that supports the relationship between TB and plasma cell dyscrasias.

In most cases, the lesions appear as superficial ulcers on the glans or around the corona.[9] The lesion may appear as a solid nodule,[10] or as cavernositis with ulceration.[11] This case presented with diffuse papulonecrotic ulcers involving the whole penile shaft and the prepuce, extending to the median raphe of the scrotum. Surprisingly, the glans was spared. Although urine culture for mycobacterium was negative, suprapubic cystostomy was created to facilitate wound healing. By the 6th month of anti-TB treatment, the ulcers were mostly healed.

The differential diagnoses of penile ulcers include syphilis, recurrent herpes simplex, chancroid, penile carcinoma, and erythroplasia of Queyrat.[12,13] Although rare, the possibility of TB as a cause of penile ulcer should be kept in mind. The presence of acid-fast bacilli in the smear examination of ulcer confirms the diagnosis of TB of the penis. If the diagnosis is made early and effective chemotherapy is started, excellent response can be anticipated. It can lead to complete healing of the lesion without leaving behind any sequelae.[4]

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